

JUN 07 1993



June 4, 1993

Paul McGinley
Town Manager
Town of Rockingham
P.O. Box 370
Bellows Falls, VT 05101

RE: Former White Mountain Paper Co. Mill (VTDEC Site #92-1267)

Dear Mr. McGinley:

Enclosed is the report on the inspection of the closure of the 13,500 gallon underground storage tank and site assessment at the above referenced site. Also enclosed are the completed State of Vermont Underground Storage Tank Closure Forms.

The report recommends additional investigation and clean-up of residual No.6 oil at the mill. Please call me once you have reviewed the report so that we can discuss any questions that you may have.

Sincerely,

Peter M. Murray
Project Hydrogeologist

cc: Lynda Wedderspoon, VTDEC
Marc Coleman, VTDEC

JUN 07 1993

INSPECTION REPORT
UNDERGROUND STORAGE TANK CLOSURE AND SITE ASSESSMENT
FORMER WHITE MOUNTAIN PAPER COMPANY MILL
BELLOWS FALLS, VERMONT
VTDEC SITE #92-1267

May, 1993

Prepared for:

Town of Rockingham, Vermont

Prepared by:

Griffin International, Inc.
2B Dorset Lane
Williston, Vermont
(802) 879-7708

TABLE OF CONTENTS

SECTION	PAGE
I. INTRODUCTION	1
II. UNDERGROUND STORAGE TANK CLOSURE	2
III. INITIAL SITE ASSESSMENT	4
IV. CONCLUSIONS	5
V. RECOMMENDATIONS	6
APPENDIX A: Site Photographs	
APPENDIX B: Laboratory Results	
APPENDIX C: Site Maps	

I. INTRODUCTION

This report details the inspection of the closure of one 13,500 gallon underground storage tank (UST) and the initial site assessment at the former White Mountain Paper Company Mill (mill), in Bellows Falls, Vermont. The mill is currently abandoned and is owned by the Town of Rockingham. The Town of Rockingham recently acquired the mill through foreclosure due to delinquent taxes. The UST closure inspection and initial site assessment were conducted by Griffin International, Inc. (Griffin) for the Town of Rockingham.

All land surrounding the mill building is owned by New England Power Co. This includes the land surrounding the UST, land between the boiler room and the drainage swale, and the drainage swale itself.

On September 17, 1991, a release of petroleum product to the Connecticut River, in the vicinity of the paper mill, was reported to the Vermont Department of Environmental Conservation (VTDEC). The release was reported by fishermen who observed thick, black petroleum product flowing into the river via a drainage swale.

Subsequent investigation revealed that the product was flowing to the drainage swale through an underground pipe which is attached to the floor drain in the paper mill boiler room. Apparently, a fitting had been removed from the feed line from an underground storage tank (UST) to the boiler. When the fitting was removed, approximately 1,500 gallons of No.6 oil siphoned out of the UST, through the feed line, and onto the boiler room floor. The product then seeped into the floor drains and out to the drainage swale through underground piping.

A significant amount of product had accumulated in the drainage swale and some had seeped several feet into soils on the bottom and sides of the swale. Approximately 72 cubic yards of contaminated soils and debris were excavated from the drainage swale and were removed from the site. In addition, some of the oil that had accumulated on the boiler room floor was removed.

A follow up assessment was conducted by VTDEC in October, 1992. The assessment concluded that petroleum contamination still remained in the drainage swale and that petroleum product was still flowing into the swale from the paper mill boiler room floor drain.

In December, 1992, the paper mill was acquired by the Town of Rockingham. At that point, VTDEC requested that the Town act as coordinator to facilitate permanent closure of the No.6 oil UST and assessment of residual No.6 oil contamination in the drainage swale. In response, the Town of Rockingham contracted Griffin to conduct these tasks.

On May 11-13, 1993, the remaining product in the UST was removed and the inside of the tank cleaned. In addition, Griffin conducted a site assessment which included digging test pits, collection and analysis of soil samples and inspection of the boiler room.

II. UNDERGROUND STORAGE TANK CLOSURE

Griffin contracted TWM Northeast to remove the remaining product from the No.6 oil UST. Greg Chico Excavating, of Springfield, Vermont, was contracted for excavation of soils around the UST.

Soils from the top of the UST were excavated on May 11. The soils were inspected by the on-site Griffin inspector. The inspector screened the soils for volatile organic compounds (VOCs) using a portable photo-ionization device (PID). Most of the soils along the top of the UST appeared to be free of petroleum contamination (see photographs, Appendix A). No VOCs were detected in soils above the tank. There was some petroleum staining observed, however, in soils near the north end of the UST. The fill pipe for this tank ran from the corner of the mill building, underground, to the north end of the tank. Due to the soil staining observed in this area, it appears that the fill pipe may have leaked where it was attached to the tank or there may have been overfills of the tank which seeped into the ground in this area.

Once the top of the UST was exposed, TWM began pumping the product from the tank into a vac-truck. Although our initial estimate of the amount of product remaining in the tank was 800 gallons, approximately 3,000 gallons were found to be in the UST. In addition, we initially assumed that the UST had a capacity of 10,000 gallons. After exposing the top of the tank, we concluded that the tank actually had a capacity of 13,500 gallons.

To reduce the viscosity of the product so it could be pumped out, 500 gallons of No.2 oil were mixed with the No.6 oil. Upon entry of the UST, it was found to be lined with a three inch layer of concrete. Removal of the product and cleaning the inside of the tank was completed on May 12. Once the tank was cleaned, the inside was visually inspected. No holes were holes in the tank walls.

Due to the concrete on the inside of the UST and the large size of the tank, it was apparent that removal of the tank from the ground would be difficult, if not impossible. Permission was then obtained from VTDEC to close the tank in place.

On May 13, soils along the north end and west side of the UST were excavated to a depth of approximately twelve to fourteen feet below grade. The excavated soils were visually inspected and were screened for VOCs by PID.

Soils excavated from the north end of the UST were stained black from a depth of one foot to three feet below grade. These soils contained no detectable VOCs as measured by PID. At three feet, a layer of asphalt was visible. This asphalt was likely at grade at one time and is now acting as a confining layer for the downward migration of petroleum contamination. Soils from three feet to eight feet appeared clean and no VOCs were detected in them. Soils from eight feet to twelve feet were also stained black and contained VOC concentrations of up to 10 ppm. The black staining was concentrated near the tank wall indicating that significant migration of contamination has not occurred.

A large trench was excavated along the west side of the UST to a maximum depth of fourteen feet. The west side of the UST was totally exposed (see photographs, Appendix A). Soils directly beneath this side of the tank were stained black while soils along the west side of the excavation, only three feet from the tank, appeared free of contamination. Soils directly beneath the west side of the UST contained up to 8.5 ppm VOCs as measured by PID.

Excavation of soils along the east side of the UST was not feasible, due to the proximity of the building foundation. Excavation of soils along the south end of the UST was also not feasible due to the existence of a water main in this area.

A total of five grab soil samples were collected from excavations along the sides of the UST. Three of the samples, SS#1, SS#4 and SS#5 were submitted to the laboratory for chemical analysis. The soils were analyzed for VOCs, by EPA Method 8020, and for total petroleum hydrocarbons (TPH) by EPA Method 418.1.

SS#1 was collected from the northeast corner of the UST at a depth of three feet below grade, on top of the buried layer of asphalt. It was stained black and contained a distinct petroleum odor. SS#4 was collected from the west side of the excavation along the west side of the UST from a depth of twelve feet below grade. The sample consisted of dry, light brown sand and gravel and appeared to be free of petroleum contamination. SS#5 was collected from the bottom of the excavation at the north end of the UST, from a depth of fourteen feet below grade. It consisted of moist, gray, silty sand and contained a slight petroleum odor.

Results of the analyses of SS#1 indicate that the sample contained none of the VOCs included in the 8020 analysis, however, the sample contained 1,040 ppm TPH as measured by EPA Method 418.1. The analyses of SS#4 indicate that soils along the west side of the UST contain no VOCs and no petroleum hydrocarbons. Analyses of SS#5 indicate that soils along the north end of the UST, near the bottom of the tank contain no VOCs. The sample did contain 7,140 ppm TPH as measured by EPA Method 418.1, however.

Results of these laboratory analyses are contained in Appendix B.

No groundwater was observed in these excavations. Based on the increasing moisture content in the soils at depth, it appears that the water table in the vicinity of the UST is at a depth of between fifteen and twenty feet. Soils in the area consist of medium to coarse sand and gravel and become finer and contain more silt with depth.

At the completion of soil sampling, the excavations were backfilled with the original soil. The UST remains empty at this time in its original location.

III. INITIAL SITE ASSESSMENT

Between May 11 and May 13, the on-site Griffin inspector conducted an initial site assessment to determine the extent of residual petroleum contamination as a result of the 1991 release of No.6 oil into the boiler room floor drains. The boiler room was inspected using flashlights (the inside of the mill building is totally dark due to the boarding up of all the windows). Floor drain trenches, which run across the length and width of the boiler room, were found to be full of No.6 oil. In addition, a large portion of the floor is still covered with oil and several drums of oil and sorbent material remain on the floor.

The boiler room floor drain trenches apparently flow to a collection point on the southwest side of the boiler room. From here, water and/or oil flows through underground piping to the drainage swale. Approximately half way between the boiler room and the drainage swale, there is a manhole access to the floor drain. The access was inspected on May 12 and was found to contain used sorbent material. Water flowing through this access contained sheens and rust colored staining, which is indicative of residual petroleum contamination.

It is not known if the underground piping is intact along its entire length. If it is not intact, it is possible that soils and/or groundwater in the area could be contaminated. A verbal request to dig test pits along the piping run was denied by NEPC on May 11, 1993.

A sanitary sewer main runs through this area, perpendicular to the floor drain. A visual inspection of the sewer was conducted during this assessment via a manhole near the floor drain access. No petroleum contamination was observed in this manhole.

Visual inspection of the drainage swale was also conducted between May 11 and May 13. Water was observed flowing out of the ground at the northwest end of the swale. The water appeared to be free of petroleum contamination until the soils around the seep were disturbed in an attempt to locate the end of the pipe. At this point, small oil globules and a heavy sheen were observed on the water. The end of the pipe was not located. It appears

that addition gravel has been dumped or plowed over the bank, burying the end of the pipe.

From the outfall, the seep flows along the top of the ground, through a small channel, for approximately thirty feet. It then seeps back into the sand, and does not reappear at the surface.

Soils along the bottom of the drainage swale appear generally free of petroleum contamination. There are some isolated clumps of oil stained sand and debris at the surface along the swale, however.

The locations of test pits with VOC concentrations are shown on the Site Map, in Appendix D. Each pit was approximately two feet deep. Soils collected from the pits were screened for VOCs by PID. In general, soils in the four test pits closest to the floor drain outfall contained no detectable VOCs and appeared clean. Soils in the two test pits closest to the Connecticut River were found to contain black staining and elevated VOC concentrations.

The river bank was also inspected on each day of the assessment. No sheens, staining or product were observed along the bank or in the river.

IV. CONCLUSIONS

Based on the findings of the initial site assessment and UST closure inspection, we have reached the following conclusions:

1. There have been releases of No.6 oil to the subsurface in the vicinity of the 13,500 gallon UST. These releases may have been due to overfills of the UST and/or a leak in the fill pipe. It does not appear that the tank leaked, due to the three inch concrete lining.
2. Petroleum releases in the vicinity of the UST have resulted in limited contamination of soils immediately adjacent to the tank. It is not known if groundwater in the area has been contaminated.
3. There remain significant quantities of No.6 oil on the boiler room floor and in the floor drain trenches. This oil is slowly flowing into the underground pipe which runs from the boiler room to the drainage swale. It is not known if the pipe is entirely intact. If it is not intact, it is possible that soils and/or groundwater along its length could also be contaminated with No.6 oil.
4. Removal of 72 yards of petroleum soaked sand and debris from the drainage swale apparently resulted in removal of a large portion of the contamination in this area. However, there

remain several clumps of oil soaked sand and debris along the swale and soils at the bottom of the swale, near the river, still contain petroleum contamination. Residual contamination in this area may be due to continued introduction of petroleum contaminated water from the boiler room floor drain.

5. During Griffin's initial site assessment, no petroleum contamination was observed to be entering the Connecticut River. It is likely, however, that during significant precipitation events, surface water flows along the entire length of the drainage swale, emptying into the river. This runoff likely contains petroleum contamination. Contaminated water seeping from the floor drain discharges into the river through the subsurface.

V. RECOMMENDATIONS

Based on the above conclusions, Griffin presents the following recommendations:

1. To determine if groundwater in the vicinity of the UST is contaminated with petroleum hydrocarbons, we recommend the installation of one groundwater monitoring well immediately west of the tank. Groundwater samples collected from the well should be analyzed for VOCs, by EPA Method 624, and for semi-volatile organic compounds and TPH by EPA Method 8100.
2. To determine if soils and groundwater in the vicinity of the underground pipe, which runs from the boiler room floor drain to the drainage swale, are contaminated, we recommend the installation of three groundwater monitoring wells along its length. Groundwater samples from these wells should also be analyzed by EPA Methods 624 and 8100. Locations of the four proposed monitoring wells are shown on the Site Map, in Appendix D.
3. To prevent the continued flow of No.6 oil to the drainage swale, we recommend that the remaining product on the boiler room floor and floor drains be thoroughly cleaned. Recovered product should then be properly disposed. In addition, the sorbent materials in the floor drain access should be removed and properly disposed. Construction of a collection dam at the floor drain outlet, on the northwest end of the drainage swale, should also be completed.
4. Residual petroleum contamination should be removed from the drainage swale to prevent continued impact to the Connecticut River. This will likely involve excavations of contaminated soils and debris in the area. In addition, the

underground pipe should be exposed at its outfall. This will aid in construction of the collection dam.

5. All additional work conducted outside of the paper mill building will require approval from New England Power Co. (NEPC). NEPC owns all the impacted land outside of the drip line of the mill building

APPENDIX A
Site Photographs

FORMER WHITE MOUNTAIN PAPER COMPANY MILL
BELLOWS FALLS, VERMONT

TOP OF 13,500 GALLON NO.6 OIL UST



FORMER WHITE MOUNTAIN PAPER COMPANY MILL
BELLOWS FALLS, VERMONT

EXCAVATION ON WEST SIDE OF 13,500 GALLON NO.6 OIL UST



FORMER WHITE MOUNTAIN PAPER COMPANY MILL
BELLOWS FALLS, VERMONT

EXCAVATION ON NORTH SIDE OF 13,500 GALLON NO.6 OIL UST



FORMER WHITE MOUNTAIN PAPER COMPANY MILL
BELLOWS FALLS, VERMONT

BOILER ROOM FLOOR



FORMER WHITE MOUNTAIN PAPER COMPANY MILL
BELLOWS FALLS, VERMONT

BOILER ROOM FLOOR DRAIN MANHOLE ACCESS

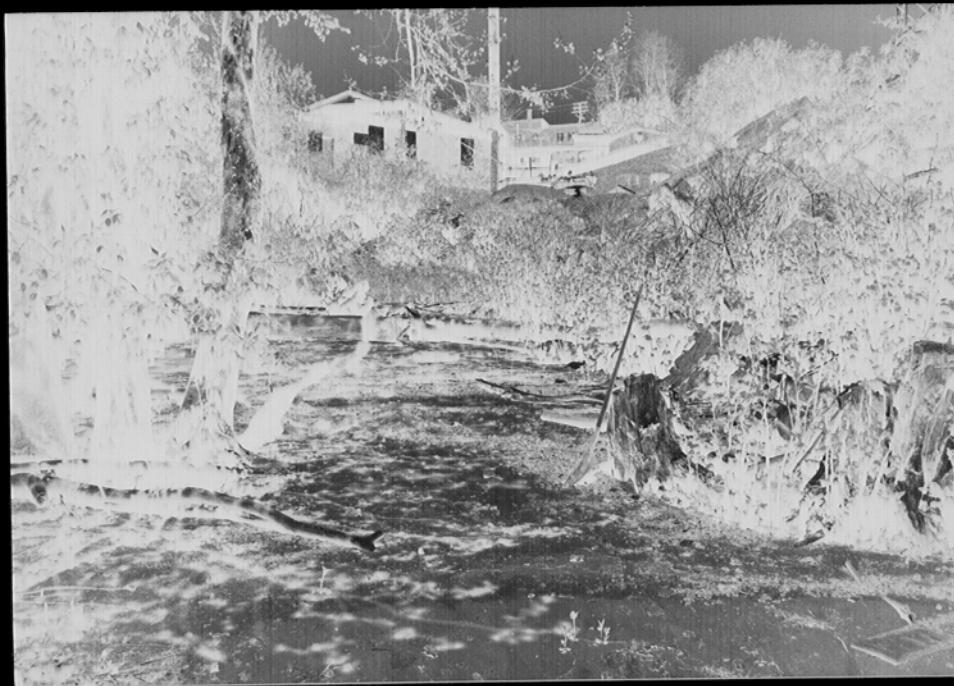


FORMER WHITE MOUNTAIN PAPER COMPANY MILL
BELLOWS FALLS, VERMONT

BOILER ROOM FLOOR DRAIN OUTFALL



DRAINAGE SWALE



APPENDIX B

Laboratory Results



ENDYNE, INC.

RECEIVED JUN 02 1993

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International
PROJECT NAME: Town of Rockingham
DATE REPORTED: May 28, 1993
DATE SAMPLED: May 13, 1993

PROJECT CODE: GITR1714
REF. #: 46,141 - 46,143

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody did not indicate sample preservation.

Although EPA Method 8020 analysis was requested; due to scheduling constraints, the samples were analyzed by equivalent EPA Method 8240.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

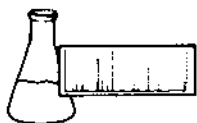
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate data was determined to be within Laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020 COMPOUNDS BY EPA METHOD 8240

CLIENT: Griffin International
PROJECT NAME: Town of Rockingham
REPORT DATE: May 28, 1993
SAMPLER: Peter Murray
DATE SAMPLED: May 13, 1993
DATE RECEIVED: May 14, 1993

PROJECT CODE: GITR1714
ANALYSIS DATE: May 21, 1993
STATION: SS #1
REF.#: 46,141
TIME SAMPLED: 14:05

<u>Parameter</u>	<u>Detection Limit (ug/kg)</u>	<u>Concentration As Received (ug/kg)</u>
Benzene	10	ND ¹
Chlorobenzene	20	ND
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	10	ND
Toluene	10	ND
Xylene	30	ND
MTBE	30	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 2²

ANALYTICAL SURROGATE RECOVERY:

1,2 Dichloroethane-d4:	100.%
Toluene-d8:	103.%
4-Bromofluorobenzene:	102.%

PERCENT SOLIDS: 88.%

Notes:

- 1 None detected
- 2 Tetrachloroethene present at 169 ug/kg.



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020 COMPOUNDS BY EPA METHOD 8240

CLIENT: Griffin International
PROJECT NAME: Town of Rockingham
REPORT DATE: May 28, 1993
SAMPLER: Peter Murray
DATE SAMPLED: May 13, 1993
DATE RECEIVED: May 14, 1993

PROJECT CODE: GITR1714
ANALYSIS DATE: May 21, 1993
STATION: SS #4
REF.#: 46,142
TIME SAMPLED: 14:20

<u>Parameter</u>	<u>Detection Limit (ug/kg)</u>	<u>Concentration As Received (ug/kg)</u>
Benzene	10	ND ¹
Chlorobenzene	20	ND
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	10	ND
Toluene	10	ND
Xylene	30	ND
MTBE	30	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

ANALYTICAL SURROGATE RECOVERY:

1,2 Dichloroethane-d4:	99.%
Toluene-d8:	101.%
4-Bromofluorobenzene:	97.%

PERCENT SOLIDS: 78.%

NOTES:

1 None detected



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020 COMPOUNDS BY EPA METHOD 8240

CLIENT: Griffin International
PROJECT NAME: Town of Rockingham
REPORT DATE: May 28, 1993
SAMPLER: Peter Murray
DATE SAMPLED: May 13, 1993
DATE RECEIVED: May 14, 1993

PROJECT CODE: GITR1714
ANALYSIS DATE: May 21, 1993
STATION: SS #5
REF.#: 46,143
TIME SAMPLED: 14:45

<u>Parameter</u>	<u>Detection Limit (ug/kg)³</u>	<u>Concentration As Received (ug/kg)</u>
Benzene	10	ND ¹
Chlorobenzene	20	ND
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	10	ND
Toluene	10	ND
Xylene	30	ND
MTBE	30	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: >25²

ANALYTICAL SURROGATE RECOVERY:

1,2 Dichloroethane-d4:	112.%
Toluene-d8:	100.%
4-Bromofluorobenzene:	100.%

PERCENT SOLIDS: 80.%

Notes:

- 1 None detected
- 2 Tetrachloroethene present at 458 ug/kg.
- 3 Detection limit was raised due to the presence of significant levels of non-target organic contaminants which limits the detection range of target analytes. Sample run at 5% dilution.

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International
PROJECT NAME: Town of Rockingham
DATE REPORTED: June 3, 1993
DATE SAMPLED: May 13, 1993

PROJECT CODE: GITR1715
REF. #: 46,144 - 46,146

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody did not indicate sample preservation.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

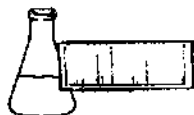
All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

TOTAL HYDROCARBONS - EPA METHOD 418.1 (SOIL)

CLIENT: Griffin International
REPORT DATE: June 3, 1993
PROJECT NAME: Town of Rockingham
PROJECT CODE: GTR1715
DATE SAMPLED: May 13, 1993
DATE RECEIVED: May 14, 1993
DATE ANALYZED: June 2, 1993
SAMPLER: Peter Murray

<u>Reference #:</u>	<u>Station ID:</u>	<u>Concentration (mg/kg)¹</u>
46,144	SS#1 ; 14:05	1,040.
46,145	SS#4 ; 14:20	ND ²
46,146	SS#5 ; 14:45	7,140.

Notes:

- 1 Method detection limit is 6.1 ppm
- 2 None detected



CHAIN-OF-CUSTODY RECORD

006327

Relinquished by: Signature <i>[Signature]</i>	Received by: Signature <i>Tonia M. Chambers</i>	Date/Time <i>5/14/93</i> <i>3:45</i>
Relinquished by: Signature	Received by: Signature	Date/Time

Requested Analyses

[illegible]

APPENDIX C

Site Maps

SITE LOCATION MAP
FORMER WHITE MOUNTAIN PAPER COMPANY MILL
BELLOWS FALLS, VERMONT

MAP SOURCE: U.S.G.S BELLOWS FALLS VT-NH QUADRANGLE
PROVISIONAL EDITION 1985
SCALE 1: 25,000

